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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest and Alaska Fisheries Center
Resource Assessment and Conservation
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CRUISE RESULTS

CHARTERED F/V AMERICAN VIKING
CRUISE NO. 87-1
SABLEFISH ABUNDANCE AND SIZE COMPOSITION AT INDEXING SITES OFF OREGON AND WASHINGTON

CRUISE PERIOD AND AREA

Between August 17, and September 21, 1987, the chartered vessel American Viking sampled to obtain indices of sablefish (Anoplopoma fimbria) abundance at eight sampling sites off Oregon and Washington (Figure 1). Depths surveyed ranged from 150 to 1025 fathoms.

OBJECTIVES

The primary objective of the cruise was to obtain standardized catch per unit effort (CPUE) data at selected index sites which are fished every other year to obtain indications of population trends. Biological data including maturity, length, sex, and age composition were obtained to determine the biological characteristics of the population. Those sablefish not required for biological samples were double tagged and released to study migration and growth and to establish tag loss rates.

GEAR

Strings of 10 conical traps each were fished at selected depths at each site. The traps have a bottom ring which is 54" O.D., a top ring of 33.5" O.D., a height of 28", and the tunnel entrance is on the side. Groundlines were 550 fathoms in length and of 5/8" line. Traps were spaced at intervals of 50 fathoms. Trap bridles were attached to the groundline gangions by brummel hooks or "C" hooks. A perforated plastic bait jar containing approximately two pounds of chopped herring was hung in each trap.

METHODS

Sampling was conducted from south to north at eight index sites off Oregon and Washington which were sampled in 1985 (Figure 1). Trap strings were fished as near as possible to the 150, 225, 300, 375, 450, 525, and

between 600 and 1025 fathom isobaths at each site. Two sets were made at each depth. Trap fishing was limited to 24 hours ± 1 hour by using magnesium alloy, timed-release devices to close tunnel entrances. Standard data collections included:

1. Number and weight of sablefish captured in each trap;
2. Number and weight of other species;
3. Lengths of all sablefish;
4. Otoliths, sex, and sexual maturity from a random sample of 20 sablefish captured at each depth at each site, plus additional stratified samples of larger fish when available.

RESULTS

Sablefish catches, mean lengths and percentages above minimum size limit by sampling site and for sites combined, are shown by depth in Table 1. Highest catches were made at the Tillamook Head, Oregon, and Willapa Bay and Cape Johnson, Washington sites, while the lowest catch rates occurred at the Yaquina Bay and Cape Lookout, Oregon sites and at the Nitinat Canyon, Washington site. Catch rates were highest at 300 and 450 fathoms and were lowest at 150 and >600 fathoms. Standardized fishing effort at 150, 225, 300, 375, 450, 525, and >600 fathoms produced 8%, 16%, 22%, 13%, 18%, 15%, and 8%, respectively, of the total number of sablefish captured.

Sablefish length-compositions and mean lengths by site are shown in Figure 2. Mean lengths were greatest at Cape Lookout, (55.8 cm) and Nitinat Canyon, (58.2 cm) and were smallest at the Yaquina Bay site (49.2 cm). Sablefish length-compositions and mean lengths by depth for all sites combined are shown in Figure 3. Mean lengths generally increased with depth and at 150, 225, 300, 375, 450, 525, and >600 fathoms were 51.8, 53.2, 52.2, 54.6, 53.8, 57.4, and 63.3 cm, respectively.

Catch rates in 1987, for all eight sites combined (in numbers of sablefish per trap at standard depths 150-450 fathoms) were 62% lower than those obtained in the 1985 survey. Submarketable-sized sablefish (<52 cm fork length) made up 45.6% of the catch in the 1987 survey compared to 55.5% of the catch in 1985.

Nearly 1,650 sablefish were double tagged with anchor tags and released during the survey.

SCIENTIFIC PERSONNEL

Leg I: (August 20 - September 4, 1987)
Norman Parks, NWAFC, Field Party Chief
Mark Wilkins, NWAFC, Fishery Biologist
Ken Weinberg, NWAFC, Fishery Biologist

Leg II: (September 5 - September 21, 1987)
Frank Shaw, NWAFC, Field Party Chief
Brady Coleman, NWAFC, Fishery Biologist
Connie Iten, NWAFC, Fishery Biologist

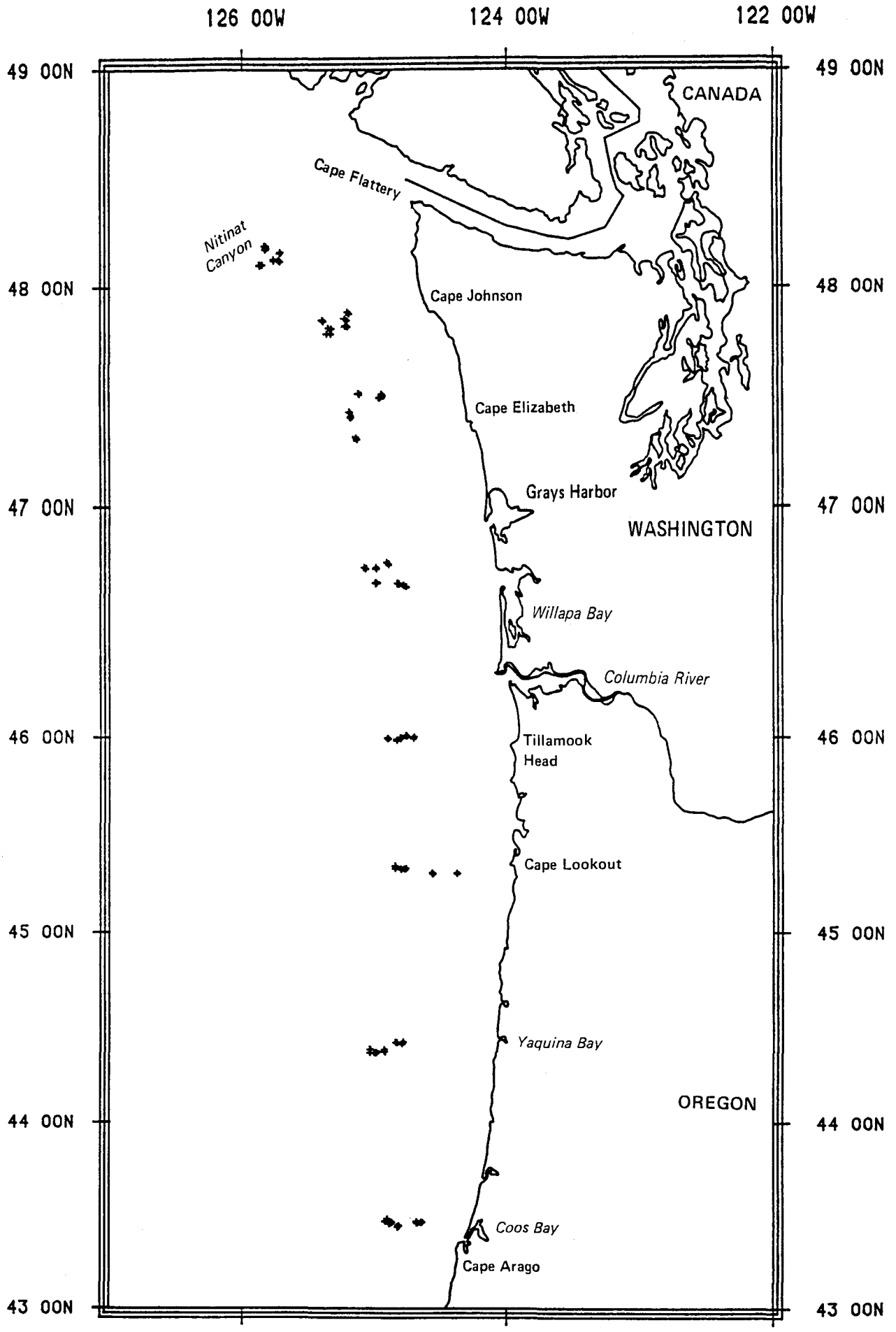


Figure 1.--Location of sablefish abundance indexing sites off Oregon and Washington, American Viking Cruise 87-1.

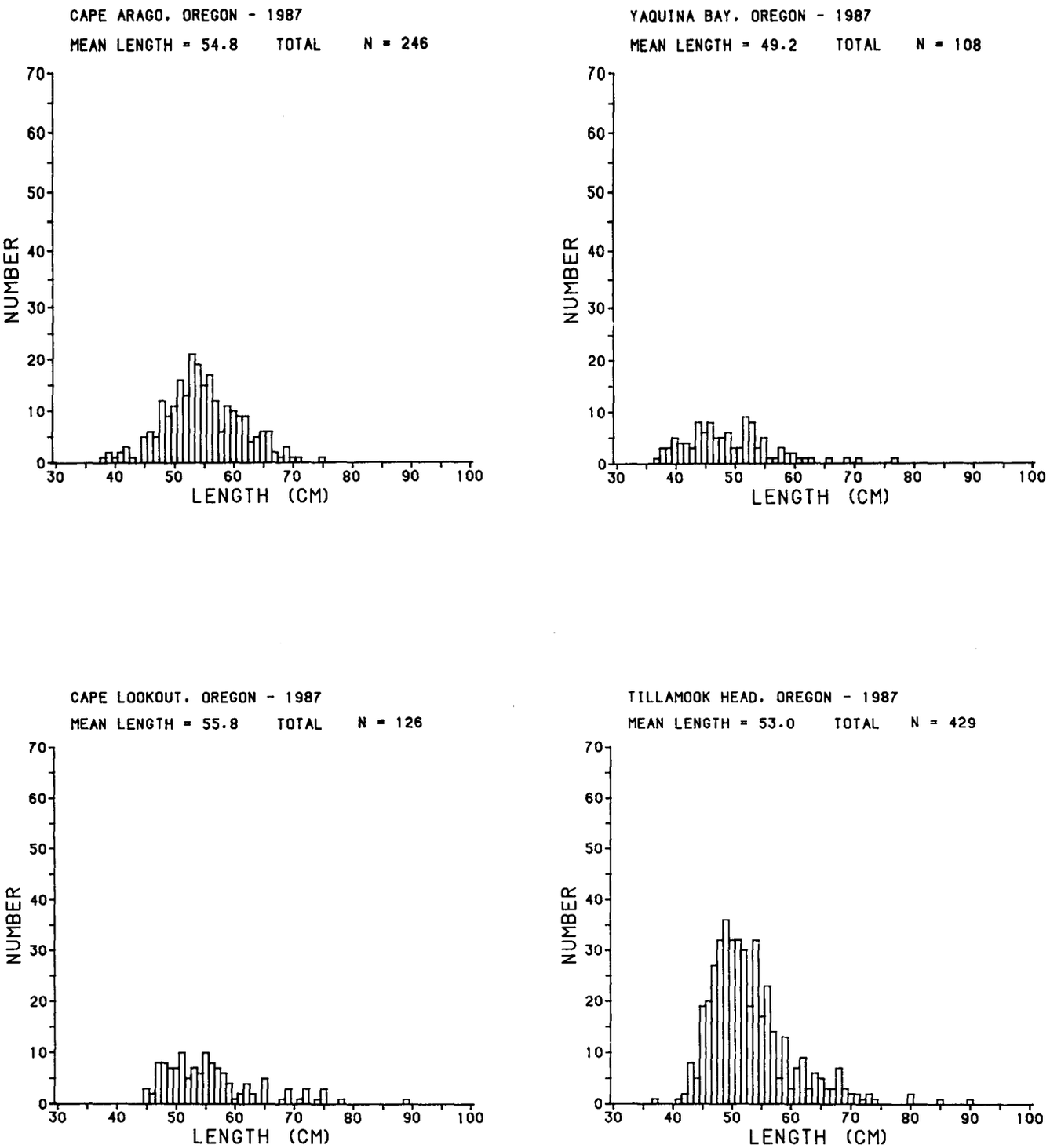
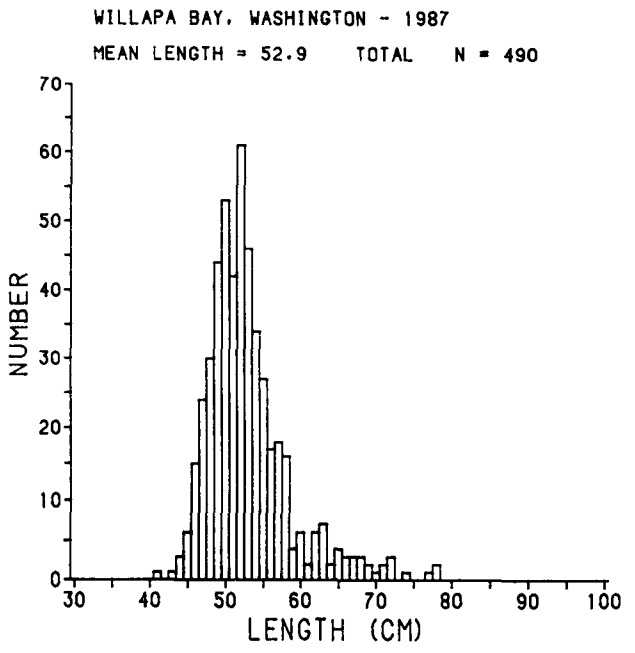
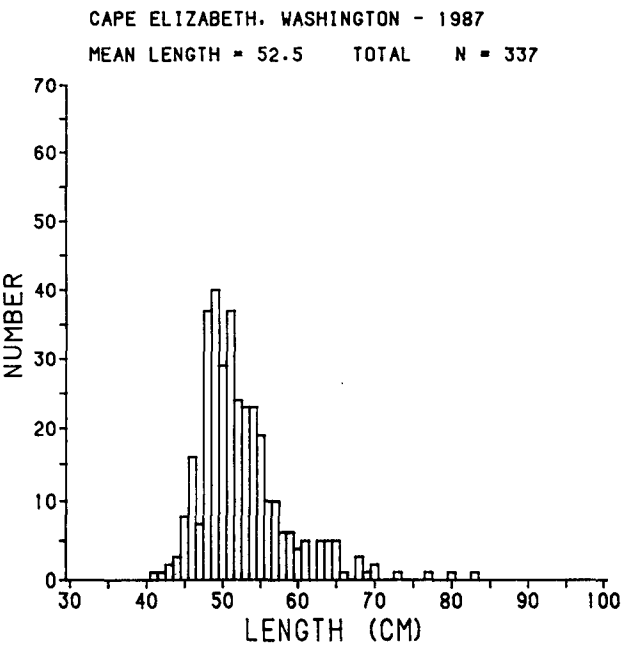
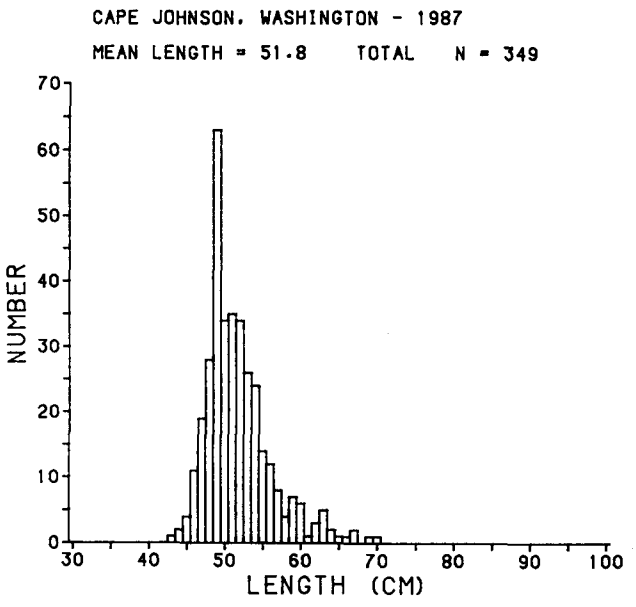


Figure 2.--Sablefish length compositions and mean lengths by indexing site at the standard depths (150-450 fathoms), American Viking Cruise 87-1.







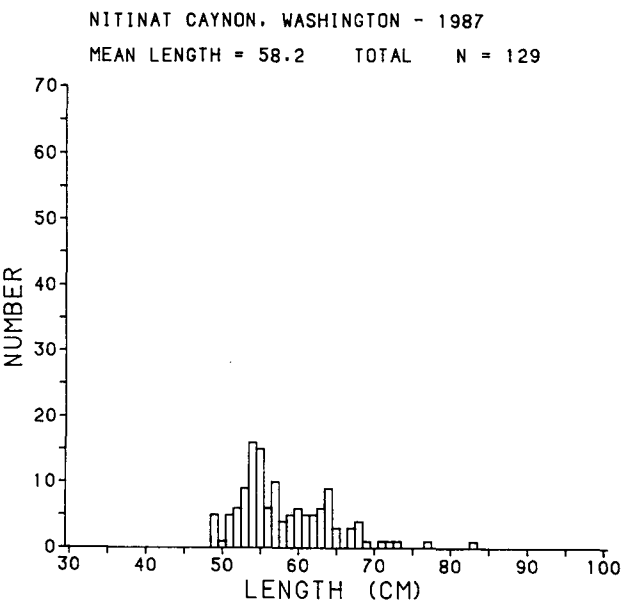


Figure 2.--Continued.

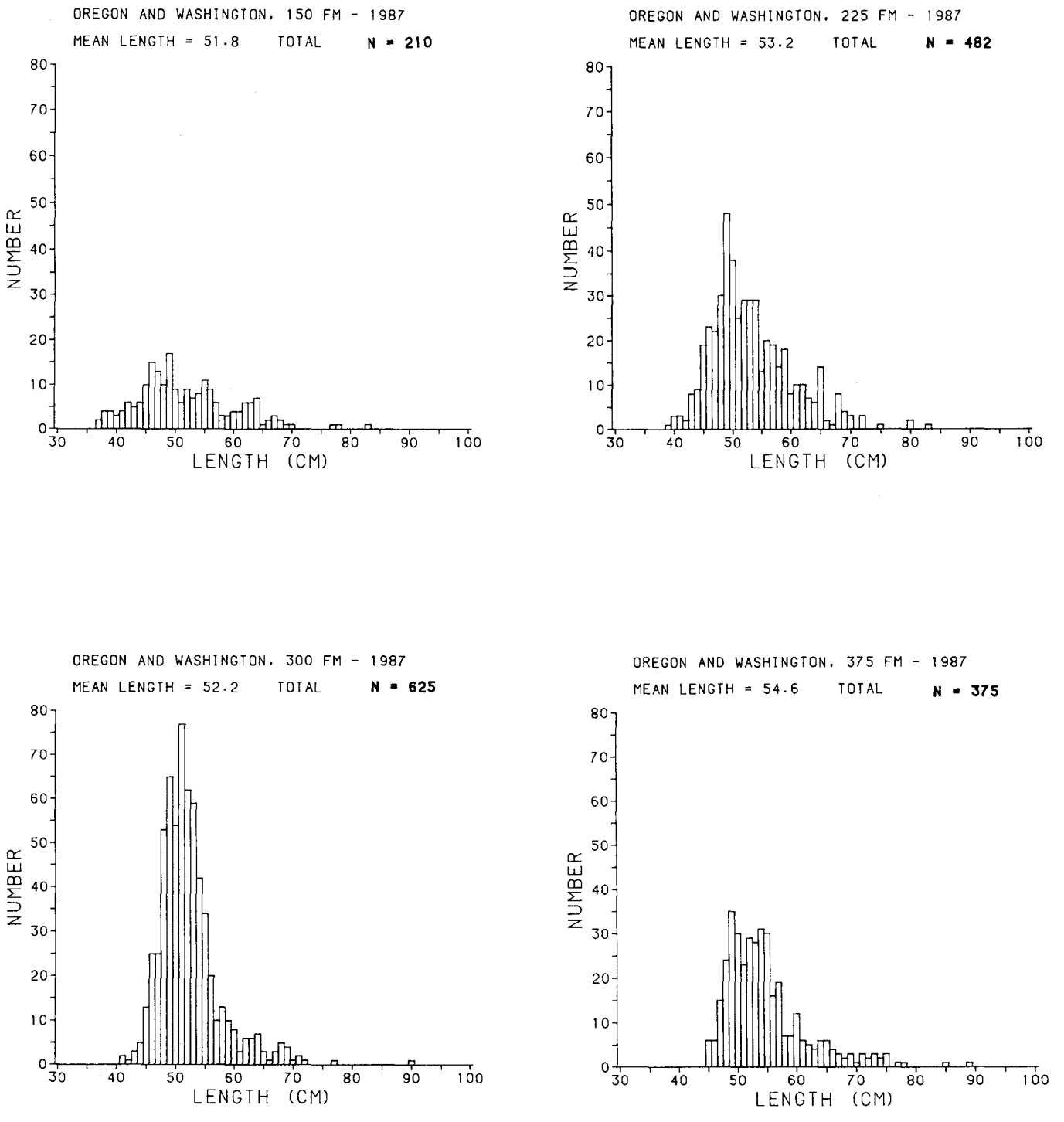
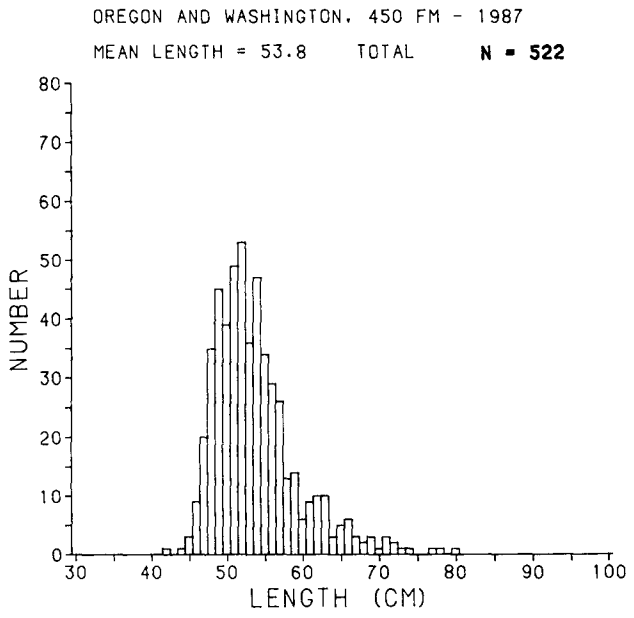
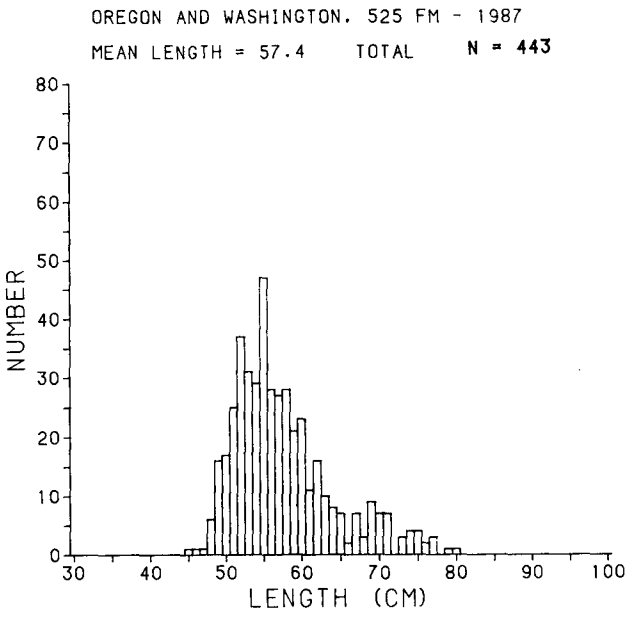


Figure 3.--Sablefish length compositions and mean lengths by depth for all sites combined, American Viking Cruise 87-1.





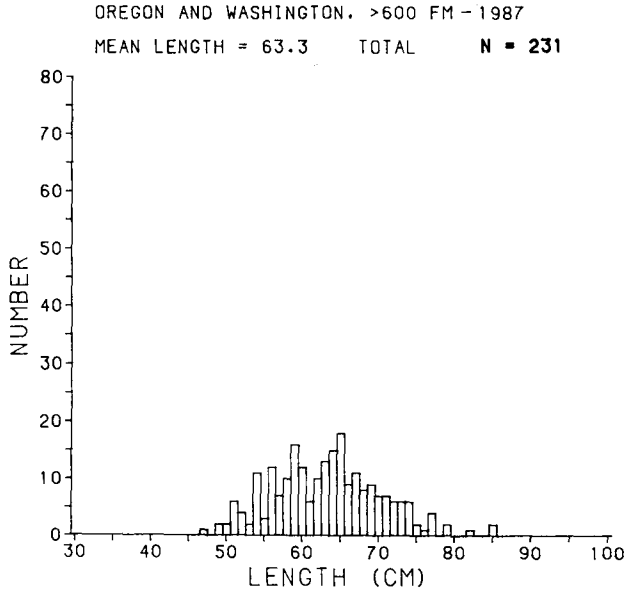


Figure 3.--Continued.

Table 1.--Sablefish catches, mean lengths and percentage above size limit[1/] by indexing site and for all sites combined by depth, American Viking Cruise 87-1.

Depth (fm)	No. of fish	Mean fork length (cm)	% above size limit	No. of fish	Mean fork length (cm)	% above size limit	No. of fish	Mean fork length (cm)	% above size limit
	Cape Arago, OR			Yaquina Bay, OR			Cape Lookout, OR		
150	26	50.1	34.6	42	45.7	9.5	5	50.4	40.0
225	72	56.6	70.8	23	44.8	4.3	10	61.0	100.0
300	43	54.2	62.8	11	53.8	63.6	18	56.7	77.8
375	67	55.4	70.5	16	53.9	62.5	60	55.4	53.3
450	46	54.7	65.9	16	56.8	62.5	33	55.5	54.5
525	38	59.7	82.4	49	57.8	80.4	46	56.8	73.9
>650	28	63.7	96.4	43	64.7	100.0	12	64.8	100.0
Total	320			200			184		
	Tillamook Head, OR			Willapa Bay, WA			Cape Elizabeth, WA		
150	51	52.2	41.2	42	54.8	52.4	21	56.8	81.0
225	168	52.2	36.9	82	52.7	41.5	21	62.1	100.0
300	46	52.5	32.6	183	51.7	31.7	206	50.3	23.8
375	47	55.4	57.4	104	53.9	54.5	42	52.2	33.3
450	117	53.7	50.4	84	53.5	50.0	47	56.1	66.0
525	52	58.0	76.9	60	54.9	62.5	33	65.3	97.0
>650	20	72.6	100.0	68	56.7	79.4	5	71.8	100.0
Total	501			623			375		
	Cape Johnson, WA			Nitinat Canyon, WA			All Sites Combined		
150	21	49.2	8.3	11	60.5	100.0	219	51.8	41.4
225	83	50.8	26.8	24	56.5	87.5	483	53.2	46.1
300	66	52.3	36.4	55	58.2	88.5	628	52.2	38.4
375	28	52.1	32.1	22	60.1	81.8	386	54.6	55.2
450	161	52.2	38.5	20	56.6	80.0	524	53.8	51.1
525	142	55.8	76.8	34	57.9	70.6	454	57.4	76.5
>650	55	65.5	100.0	0	--	--	231	63.3	93.5
Total	556			166			2,925		

1/ Fixed gear - 1,500 pound trip limit on sablefish smaller than 22 inches total length (52.4 cm fork length). Trawl gear - 5,000 pound per trip limitation on sablefish smaller than 22 inches total length (52.4 cm fork length). Both limits are applied coastwide.